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Managing Childhood Obesity in a Primary Care Clinic

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MANAGING CHILDHOOD OBESITY IN A PRIMARY CARE CLINIC

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Linda Nnajiofor BSN, RN

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Abstract

Background: Childhood obesity and overweight have increased health burdens on health care systems, and contribute to chronic diseases such as diabetes, heart disease, asthma, and cancer. Childhood obesity is very complex for healthcare providers to manage in primary care settings.

Purpose: To improve childhood overweight and obesity approach and management in a selected primary care practice (Clinic A) in a large east Texas urban community.

Objectives: 1. Increase the percentage of children and adolescents ages 2 to 19 years seen in Clinic A, who received adequate weight management and obesity counseling, to 75%.

2. Increase the number of referrals to the weight management care team and improve the referral process in the patient population ages 2 to 19 years.

Intervention: The quality improvement project was an educational and practice intervention aimed at improving the primary care practice's obesity management including providers' provision of obesity guidance to patients and their parents using the Fifteen-Minute Obesity Prevention Protocol (FMOPP).

Results: Objective 1, post-intervention, 90% of 20 pediatric children with BMI's over the 85th percentile had obtained adequate weight management and obesity. Objective 2, post-intervention, the rate increased dramatically such that 75% of children with BMI's over the 85th percentile received referrals to Texas Children's Hospital.

Implications for practice/Conclusion: The FMOPP was effective and worked for Clinic A patients. The initiatives should be validated and then implemented in all pediatric practices. Continuing to reinforce the approaches used in this project would benefit a community where obesity is an epidemic.

Keywords: Childhood obesity, overweight, BMI, prevention, protocol

Obesity and overweight have proved to be troublesome health phenomena in this century. The most significant problem with obesity and overweight is that they co-occur or lead to chronic and costly non-communicable diseases (NCDs) such as diabetes, heart disease, asthma, and cancer. Sadly, adolescent and adulthood obesity is likely to begin during early childhood. This fact makes childhood obesity and overweight critical matters of human health. According to the Centers for Disease Control and Prevention (CDC) (2018a), overweight teens and children of the same sex and age exhibit body mass indexes (BMI) of at least the 85th to the 95th percentile. Obesity in teens and children of the same sex and age is indicated by BMIs exceeding the 95th percentile. At this point, it is clear that inadequate control of weight can lead to obesity.

Childhood obesity, overweight, and related NCDs have increased health burdens on health care systems in both the developed and developing world. Reports by the World Health Organization (WHO) (2018a) indicate that NCDs that develop due to childhood obesity account for more than 71% of total global deaths. Khang (2013) reports that a study by the World Economic Forum and the Harvard University estimated that the world would spend $47 trillion on NCDs in the coming 20 years, which is almost equal to 75% of the world's GDP. Healthy Living Matters (HLM) (2018) report shows 35% of children in Houston, Harris County aged 12 and over are either overweight or obese compared to the national average of 20.6%. HLM works in collaboration with Houston/Harris County, the community of interest of this project, to control and reduce childhood obesity. Due to the highlighted facts, this project focused on intervening to improve the childhood overweight and obesity approach in a selected primary care practice in a large east Texas urban community. The paper addresses the causes, the consequences, prevalence, and possible preventative and interventional approaches of the condition focused on the identified primary care practice. This paper presents the needs assessment of the identified

primary care practice, project identification, summary of the evidence, the quality improvement intervention implemented by a family nurse practitioner (FNP) graduate student in a Doctor of Nursing Practice (DNP) program, and the outcomes for the identified primary care practice.

Statement of the Problem

Childhood obesity constitutes a severe health condition that affects children aged 2 to 19 years. Obesity is a lifestyle disease that develops due to ineffective nutritional habits and physical activities. While the situation is a global phenomenon, its occurrence varies with the socioeconomic status of individual children. In affluent countries such as the U.S., children from families in the lower and middle socioeconomic strata have a greater likelihood to be obese. The prevalence of obesity in children is highest among children from families in the low-income level most likely because poverty is closely related to both activity and nutritional factors and NCDs (WHO, 2018b). This suggests less access to healthy food and fewer opportunities for physical activities are key. Globally, the number of overweight and obese children (ages under 5) increased to 41 million, with 340 million overweight and obese children ages 5 to 19 years in 2016 (Commission on Ending Childhood Obesity, 2018). This figure is in contrast to the 32 million people (ages under 5) recorded in 1990. In the African region, children with the condition reached 9 million people from 4 million people, which put the rate of increase at more than 30 percent. In the United States, approximately 14 million children ages 2 to 19 are obese (CDC, 2018b). If the contemporary spread of obesity among children (under age 5) persists, the number of obese children in the world will hit 70 million in 2025 (Commission on Ending Childhood Obesity, 2018).

Childhood obesity is a serious international health issue because of its precursor effect in the development of diseases like diabetes, hypertension, cancer, and cardiovascular conditions at

an earlier age or later in life. Cardiovascular conditions, cancer, respiratory problems, and diabetes account for 17.9 million, 9 million, 3.9 million, and 1.6 million NCD-caused deaths respectively. Childhood obesity often leads to adulthood obesity and increased disease risk factors (CDC, 2016b). Preventing or reducing childhood obesity and overweight is an effective way of fighting the incidence of these chronic diseases.

Background and Significance

Obesity and overweight are different but often-interchanged terms in the healthcare sector. Overweight and obesity relates to a high basal metabolic rate, which pertains to the amount of calories expended at rest resulting in excessive accumulation of central adiposity. Due to its secretion of excessive adipokines, fat accumulation and increased release of free fatty acids becomes a precursor for diabetes mellitus, increased insulin resistance, dyslipidemia, atherosclerosis, hypertension, and chronic inflammation among other factors (Redinger, 2007). The immune system is also affected by obesity with the secretion of inflammatory adipokine which puts individuals at risk for hepatocellular, esophageal and colon cancer. Obesity continues to predispose children to early manifestations of metabolic syndrome such as high blood sugar, excess body fat around the waist, decreased high-density lipoproteins, elevated cholesterol and triglycerides. Overweight and obesity co-occur and exhibit similar signs as well as effects. They are measured by an index that calculates adiposity based on weight and height (Redinger, 2007).

The Commission on Ending Childhood Obesity (2018) warns that nonintervention in childhood obesity increases the chances of lifetime overweight among the victims. Childhood overweight increases the risk of chronic health complications and an elevation in the premature onset of illnesses related to old age like heart disease and diabetes. The CDC (2016b) lists the consequences of childhood obesity as including cardiovascular diseases, disability, some cancers

(colon, breast, and endometrial), insulin resistance (a predictor of diabetes), hyperlipidemia and musculoskeletal disorders. Sleep apnea, asthma, gallstones, joint problems, fatty liver disease, skin conditions, menstrual abnormalities are other dangers of childhood obesity. Children and adolescents also experience psychological effects related to obesity such as anxiety, depression, stigma, and bullying, eating disorders and low self-esteem. Sahoo et al. (2015) refer to a study which revealed that obese children are four times more likely to report academic difficulties than healthy peers. The chronic health conditions associated with obesity increase the chances of overweight kids missing more school than children of normal weight.

The risks of childhood obesity are present in all healthcare settings even at the earliest developmental stages, such as at birth. Gestational diabetes that occurs during pregnancy can lead to increased birth weight, which may worsen the risk of overweight later in a child's life (WHO, 2018a). While breastfeeding is protective, the rates of formula usage have continued to increase posing as an early risk factor for obesity (Daniels & Hassink, 2015). Improper choice of dietary combinations for children also increases the chances of childhood obesity. Food constituents with low nutrient, high-fat, high salt and high sugar concentrations increase the danger of obesity. Beverages and energy-dense foods can also increase the vulnerability of child consumers to obesity (Ranjani et al., 2014). Besides meals, the rapid urbanization and digitization of lifestyles that deny children the adequate opportunities for physical exercise via whole play are also exacerbating the spread of obesity among children. Once children become overweight because of little physical activity, their chances of healthy living (physical, mental and social well-being) reduce further, and they stand the danger of being obese for the long term.

Genetics is another significant predictor for childhood obesity. According to Sahoo et al. (2015), increased basal metabolic index is 25% to 40% heritable. Nonetheless, the genetic effect

in obesity requires the presence of behavioral and environmental factors responsible for overweight to affect a person's weight. Sahoo et al. (2015) illustrate that genetic factors only account for 5% of the incidence in obese children. As such, even though genetics contributes to obesity, it is not responsible for the dramatic rise in cases of overweight.

Sahoo et al. (2015) report that the world is experiencing a nutritional and epidemiological transition defined by continuous nutritional deficiencies manifesting through anemia, stunting, and zinc and iron shortages that accompany obesity. While developed countries have recorded epidemic levels of obesity, developing states are facing an increase in the condition. In all nations, females are at higher risk than men to become obese in large part because of hormonal variations. According to Sahoo et al. (2015), there is convincing evidence that coronary heart disease and diabetes (Type 2) begin in childhood, with child obesity being the most determining factor. The next section addresses the needs assessment of the identified primary care practice.

Assessment

Even though childhood obesity is a global phenomenon, the rate of the problem has exploded in the U.S and particularly in urban and low-income communities. Because the developed world has experienced the brunt of the calamity and declared it an epidemic, useful frameworks, and therapeutic approaches have been established to address obesity such as the U.S Office of Disease Prevention and Health Promotion’s Healthy People 2020 initiative, and various concomitant state and city goals and plans. The current project was crucial because it examined the critical elements of childhood obesity by exploring information in the existing literature to benefit a community population served by a local community clinic in a large east Texas urban city. In developing an intervention strategy, the project revealed the measures necessary to

reduce or control the spread of obesity and associated chronic ailments, particularly those that could be implemented by family nurse practitioners practicing in primary care settings.

Preliminary Assessment

This clinic is located on the east side of downtown Houston. In the early 1900s, the area was known as Chinatown since it was predominately inhabited by Chinese immigrants. It is currently home to a large homeless population, a few businesses, small single-family houses, and median income apartment complexes. The clinic serves a wider geographic area with 81% of patients of Hispanic origin, a proportion twice that of Houston. This project took place in a primary care setting (Clinic A). It is a private, freestanding clinic. The Texas Children's Hospital, a large referral hospital, is 20 minutes away from the clinic location in the Texas Medical Center district. The clinical site is a family practice clinic offering preventative and specialized services for all ages. This practice consists of one family practice physician, and five family nurse practitioners.

As of the July 2017 American Community Survey, the population of Houston was 4,652,980. The total amount of healthcare and social assistance provided in 2017 was $29,549,435. The city's median household income (2012-2016) was $55,584 and about 16.6% of the population was below the federal poverty line (U.S. Census Bureau, 2017). In contrast, the area surrounding the clinic had a lower economic profile with more than 20% of families below the 2016 federal poverty level of $24,000 for a family of four.

Table 1

Demographic Characteristics of Harris County and Clinic A Population

Characteristics	Harris County* Percent	Clinic A ** Percent
Age (in years)		
Persons under 5 years	7.7%	7.9%
Persons under 18 years	26.9%	31.2%
Persons 65 years and over	10.2%	11.8%
Gender		
Male	49.7%	46.7%
Female	50.3%	53.3%
Race		
White	29.7%	5.2%
African American	19.7%	10.6%
Asian	7.3%	1.2%
Native Hawaiian and Pacific Islander	0.1%	0.1%
American Indian and Alaskan Native	1.1%	0.1%
Two or more Races	1.9%	1.1%
Ethnicity		
Hispanic	43.0%	81.7%
Non-Hispanic	59.8%	18.3%
Education (2012–2016)		
High school graduate or higher	80.2%	36.8%
Bachelor's degree or higher	30.1%	15.8%
Health		
Persons under 65 with a disability	6.6%	3.1%
Persons with no health insurance	20.7%	25.5%

*Adapted from U.S Census Bureau Quick Facts: Harris County, Texas. November 4, 2018

**Clinic data derived from Clinic A records.

Clinic A faces several challenges ranging from providing health care to a large at-risk population to the business or financial issues arising from meeting the needs of their low-income clients. About 40% of clinic patients are children. While a large percent of young patients are

funded by Medicaid or the Children's Health Insurance Program (CHIP), and few are funded by private insurance, the approximately 25% without insurance, payout of pocket or remain unfunded. Several common health problems in the clinic were identified from increased rates of childhood obesity, increased rates of adult obesity, frequent sick visits, and diabetic care. One of the priority healthcare problems is an increase in childhood overweight and obesity within the served population. Previously stated are reasons why exploring childhood overweight and obesity at the selected primary care clinic was the main focus. The current project addressed an identified clinical issue to improve patient outcomes. The first step was a comprehensive assessment of the clinic and its processes as a prerequisite to program development. To organize the assessment, the DNP project coordinator, an FNP graduate student, employed the 5P's Framework of Clinical Microsystems (Nelson, Batalden, Godfrey, & Lazar, 2011), which included assessing the clinic's purpose, the patients, employed professionals, processes and patterns.

The 5 Ps

Purpose. Clinic A is a family practice clinic that provides comprehensive medical care for the east Houston pediatric, adult and senior populations. The mission of Clinic A is to improve families' health and wellness, and this is stated on the clinic's webpage. When the DNP project coordinator spoke with the professionals at the clinic, they all agreed and believed that the mission stated was being met, and over the course of 8 months, it was evident that all team members were committed and supported the common mission. The owner of Clinic A currently resides in California, so management is entrusted to employed professionals, who capably handle both the day-to-day management functions and the clinical care. The location of this clinic was important because it serves patients within nearby neighborhoods as well as beyond Houston city

limits. Clinic A increased access to care for those with acute and chronic illness and injuries, and for those just needing to establish care with a family care provider. Clinic A, as a general family practice, did not provide any specialized childhood weight management care other than lifestyle modifications counseling and referrals.

Patients. Approximately 40% of the 2200 clinic patients were children. The majority (81.7%) were of Hispanic ethnicity, a larger minority population than that of the Harris County, and with approximately 50% who spoke Spanish during office visits. The percentage of children seen at the Clinic A (40%) was similar to that of Harris County (34.6%). Nearly 85% of the pediatric population in Clinic A used CHIP and/or Medicaid, an indication the clinic serves a largely low-income population. While the clinic also accepts private insurance, most of the patients were uninsured and self-pay, although the clinic did not utilize a sliding scale. The patient population varied from age, ethnicity to diagnosis. The youngest patient seen was 3 weeks old and the oldest patient was 92 years of age. About 40% of the patient population were under the age of 19 years old.

In Clinic A, obesity was a problem in all age groups, however it was particularly notable among the children. The rate of pediatric overweight and obesity in Clinic A has increased drastically compared to that of the national average. As discussed in a later section, 20% were considered obese or overweight. From observation and dialogue with the professionals, a full range of patient diagnoses were managed at this clinic. Clinic A did not have a patient satisfaction survey or results available. However, through discussion with several patients, most patients seemed satisfied with the care they received at this clinic. Nine out of 12 patients reported they received care in a timely manner, eight out of 12 reported they would recommend this clinic to others, and 12 out of 12 patients felt great about the language (all Spanish)

interpreting services received. Appointments and walk-ins. were welcomed and were usually accommodated on the same day.

Professionals. The professionals serving patients were made up of six providers including one physician and five nurse practitioners, and 21 staff, including two office managers, 11 medical assistants, four office receptionists, two insurance verifiers and two cashiers. Clinic A had no registered nurse. As stated earlier, the physician-owner (Dr. B) resided in another state but employed a family practice medical doctor, Dr. J., who directed and oversaw the activities of the clinic. The five family nurse practitioners all held master's degrees. All six of the providers saw children. One of the family nurse practitioners was employed at the clinic for over 10 years (full-time and part-time), while the others were employed for less than 5 years. The providers were all qualified to screen and treat the pediatric population for overweight and obesity based on their credentials rooted in family medicine and practice. The medical assistants' educational levels matched their responsibilities. They acquired high school education plus 9 to 12 months of medical assistant training, and then at the completion of their training obtained a medical assistant certification. Their role was to assist the providers with daily administrative and clinical activities but did not include assessing, screening, or counseling for childhood obesity. They weighed, measured, and charted heights and weights in patients' electronic medical records. The computer system automatically calculated the height and weight conversion to BMI. The office manager coordinated all clinic activities to ensure efficient patient flow. The assigned medical assistant occasionally followed up with the referrals when asked by the provider to do so but not routinely. No specific medical assistant was assigned to do referral follow-up. Upon interviewing the assigned medical assistant, it was determined that most patients and families did not follow up with their referral for weight management. The office receptionist received the patient and

took insurance information if available and also scheduled follow-up appointments. The insurance verifier verified eligibility and at the end of each visit, the cashier collected the copayment. Copayments varied by insurance type but could range from $25 to $35. If the patient had no insurance, the cashier collected private pay for services provided. The office visit cost for a new patient was $45 while the existing patients who had been active for the past three years paid $40 per office visit plus additional costs for any other services provided within the clinic.

Process. Clinic A was open 7 days a week, Sunday through Monday from 8:00 a.m. to 5:00 p.m., so it tended to be very busy. In a given day, 60% of the patients had appointments and approximately 40% of the patients were walk-ins, but these patients were generally able to see the available provider. In the appointment schedule, more than 30% did not show up for their assigned appointments. Clinic A offered preventative services such as well child care, diabetic teaching, flu and other vaccinations, and asthma action plan development; diagnostic tests such as Hemoglobin A1C, lipid panel, urinalysis, and thyroid profile; and office procedures such as EKGs and ultrasounds in the clinic. Clinic A also had an onsite pharmacy where patients could pick up their prescriptions.

Upon walking through the clinic doors, the waiting room and office clerk desk was straight ahead. The waiting room had about 30 chairs, some were a bit wider to accommodate the obese, and one television mounted on the wall to the left of the waiting room. The waiting room was next to the main entrance. To the left of the waiting room was the pharmacy where patients could pick up their prescriptions. The front desk held two office receptionists that checked in patients and took insurance information. The clinic accepted all types of insurance including Medicaid, CHIP, as well as self-pay. Past the receptionist area was a pod equipped with a desk, chairs, computers, and a printer/fax that held the workspace of the medical assistants, office

clerk, and office manager. There were 11 exam rooms in the clinic running parallel to the wall and assessment/lab area where the weights and heights were taken. Patients removed outer clothes prior to measurement but did not remove their shoes. Each room was equipped with primary care equipment such as exam tables, two chairs, manual blood pressure machine, otoscope, ophthalmoscope, tongue depressors, gloves, cotton buds, Q-tips, and hand sanitizer. There were four provider offices located in several corners inside the clinic area.

A medical assistant collected weight, height, vital signs, and pertinent health history, recorded them in the patient's electronic medical record, and placed the patient in an available room to be seen by the provider. The weight was collected with an industrial weight scale calibrated daily by a medical assistant. The weight was measured in kilograms. Height was collected with the wall scale. Height was measured in centimeters. A medical assistant documented the measured weight and height in the patient's medical records which were electronically calculated and plotted by the electronic health record (EHR). The CDC electronic growth chart for ages 2 to 20 years was used and displayed in the patient's medical record. The medical assistant was responsible for printing a brief patient medical record, recent vital signs including the BMI, and handing this to the providers before their visit. The providers were responsible for screening for pediatric overweight and obesity. The provider read the chart and noted any increased BMI. At the time of the initial clinic assessment, of 10 pediatric visits observed, only one had complete obesity screening and counseling performed, a 10% rate. Providers typically did not review obesity status with parents when the BMI exceeded the 95th percentile. Weight management materials such as posters or educational videos were not available in the clinic. No printed information was given to the children or parents. No specific obesity counseling times or sessions were offered by the clinic. However, when patients were

queried about their providers' verbal instructions, the quality of counseling was reported to be adequate. Parents did not seem concerned that their child's obesity problem was not being addressed. Nevertheless, the standards of care for overweight and obesity suggest providing support and guidance to parents and families. The role of all primary care providers in managing an increased pediatric BMI according to the AAP should be primarily screening, education of parents and children on lifestyle modifications, and making referrals to a multidisciplinary weight management team for more intensive intervention. For this clinic, that meant making referrals to Texas Children's Hospital (Barlow et al., 2007).

In addition to monitoring for height and weight, providers must assess for common accompanying conditions, and also for lifestyle dimensions needing modification. Acanthosis nigricans, an indicator of insulin resistance, was noted at the back of the neck, armpits or groin of most overweight and obese children , and weight and blood pressure screening was also conducted before a comprehensive blood test was ordered. Providers should consistently counsel on lifestyle modifications for all children such as recommending daily screen time of less than 2 hours, 9 hours of sleep time, 60 minutes of physical activity, and limiting high sugar beverages and empty calories (Barlow et al., 2007). Clinic A providers did not consistently provide these recommendations. Although no specific lab tests were indicated for diagnosing obesity, the providers usually ordered a comprehensive blood test to include insulin levels, thyroid profile, lipid panel, and kidney and liver function be done to evaluate any insulin resistance and target organ functions (Kaiser Permanente, 2012). This blood test was typically done annually. A follow-up appointment the following week after the labs were drawn was usually made to discuss the lab results. At the end of the visit, the provider recommended a weight management specialist or center (Texas Children's Hospital) for the pediatric patient who was overweight or

obese. The assigned medical assistant prepared the referral paperwork and the provider signed for approval before it was given to the patient. Upon observation and in interaction with the professionals, only one provider in the practice consistently managed obesity, but she indicated that a weight management specialist would be preferable to better care for patients with obesity. If patients had Medicaid or CHIP or private insurance, they were referred to Texas Children's Hospital where they would check patients' eligibility for their fitness and nutrition program. If not eligible, Texas Children's Hospital will offer over the phone counseling. However, only one provider made these referrals prior to the start of the project.

From observation of one of the providers known to provide the most obesity management in the clinic, the provider spent about 15 minutes in obesity counseling with the patient. The counseling included discussion on BMI, eating habits, physical activity, and health risks. Patients and families seemed to not understand what to expect, nor what was required of them to manage obesity. Some parents were concerned and engaged but most parents were not concerned. It was uncertain how much time the other providers spent on obesity counseling, but informal discussion suggested little. The intervention by this particular provider partially met the American Academy of Pediatrics (AAP) standards of care, which included reviewing the increased BMI with patient and family, identifying problem foods and suggested diet modification, and weight management care team referral but did not include assessment of patient and family motivation, and explanation of treatment plan (AAP, 2015). None of the other five providers consistently and comprehensively met all AAP standards of obesity management.

To summarize the process of care prior to the implementation of the project, a single provider was insufficient to complete screening, counseling and intervention for all overweight and obese children in Clinic A. Even this provider only partially met the interventions

recommended by the AAP. From interactions with the office manager, most providers rarely referred a patient for weight management. The tendency was for providers to overlook pediatric obesity counseling and intervention, perhaps because managing weight issues was time-consuming and complex in such a busy clinic.

Patterns. The top 10 diseases seen and managed at Clinic A were hypertension, hyperlipidemia, diabetes, obesity, back pain, anxiety, allergic rhinitis, reflux esophagitis, respiratory problems, and hypothyroidism. According to a baseline assessment of all pediatric patients ages 2 to 19 seen, 197 of 848 (23.2%) patients had BMIs greater than 85th percentile (Table 2). Out of these 197 patients, 143 (16.9%) of the clinic's pediatric population exceeded the 95th percentile and were classified as obese. The Healthy Living Matters (2018) report showed 35% of children in Harris County aged 12 to 19 years were either overweight or obese. Although pediatric overweight and obesity identification was low in U.S primary care clinics, the Centers for Disease Control and Prevention continued to emphasize the growing national rates. A study conducted by Rhee, Kessl, Lindback, Littman, and El-Kareh (2018) revealed less than 30% of the overweight and obese children were identified in primary care, with less than 10% receiving the proper diagnosis and billing codes for their overweight or obese status. According to one of the providers, Clinic A like most primary care clinics in the United States, had an increased rate of childhood overweight and obesity.

Table 2

Obesity Prevalence

Ages	National Obesity Prevalence*	Clinic A Obesity Prevalence**	Clinic A Overweight Prevalence**
2–5 years	13.9%	8.63%	5.58%
6–11 years	18.4%	26.4%	10.7%
12–19 years	20.6%	37.6%	11.2%

*Adapted from Centers for Disease Control and Prevention. November 2018.

** Data obtained from Clinic A.

Although clinic obesity rates were lower than national rates in the younger age group, in the older age group the rate was comparable to the Houston's rate of 35% (see above). The overall trend suggested obesity was on the rise for all ages compared to the national average. Among the issues observed and through interactions with the physician and nurse practitioners, the management of obesity was seen at the time of assessment as beyond their capacity to address it. Only one out of all the providers educated parents and children about healthy lifestyles, gave a referral to a weight management specialist if the BMI was above 85th percentile, and no one consistently followed up on these referrals except for an occasional verbal confirmation from the parents or patients during follow-up or sick visits. There was a significant gap in meeting the counseling and management guidelines recommended by the AAP. The screening recommendations for childhood overweight and obesity are mainly measuring the height and weight of the pediatric patient and calculating the BMI (Kaiser Permanente, 2012). The U.S. Preventative Services Task Force (USPSTF) (2017a) recommends BMI determination as an adequate screening tool for childhood overweight and obesity. Clinic A sufficiently accomplished this aspect. Of pediatric patients aged 2 to 10 years, 100% were screened but little to no obesity counseling was done. The counseling aspect of childhood overweight and obesity, specifically pertaining to diet, activity, and screen time fell short of standards. There was a

significant need to design further approaches suited for this clinic experiencing rapid increases in childhood obesity. Clinic A was ready to analyze the existing guidelines and begin the development of a program to help the vulnerable population (2 to 19 years of age) to overcome the crisis. An aim was to engage stakeholders (children, parents and healthcare professionals) as part of the process of identifying the needs of children experiencing obesity.

Project Identification

Purpose

As evident in the previous pages, providers and families should strive to avoid childhood obesity and overweight, in order to prevent future serious conditions. Childhood obesity and overweight is a serious health problem that has implications for future morbidity and ultimately premature mortality. Childhood obesity is the most significant predictor for diabetes and cardiovascular disease, and imposes substantial burdens on patients seen in Clinic A. Although childhood obesity is one of the most dangerous epidemics that can affect children, the assessment indicated the children in Clinic A were not receiving optimal care as defined by AAP standards. The purpose of the quality improvement project was to improve childhood overweight and obesity counseling and management in Clinic A. Controlling obesity will help in reducing the prevalence of life-threatening NCDs, encourage positive self-esteem, eliminate many psychosocial issues that could affect social functioning and also improve the quality of life in children (CDC, 2016b).

Objectives

1. To increase the percentage of children and adolescents ages 2 to 19 years who are obese, or overweight seen in Clinic A, who received adequate weight management and obesity counseling, to 75%.

2. To increase the number of referrals to the weight management care team and improve the referral process for the patient population ages 2 to 19 years.

Anticipated Outcomes

Childhood overweight and obesity constitute life-threatening health conditions. The preventative strategies for childhood obesity must entail activities that counter the causes, and these can be addressed in the primary care setting.

Obesity and overweight among children develop due to various causes one of which is sedentary lifestyle characterized by inadequate physical exercise (Barlow et al., 2007). Inactive lifestyle is attributed to an increasingly digitalized world that has led to a reduction in time spent by children in physical activities. Many children, especially in the middle and upper-income families, have embraced video games and online social media engagement, which consume most of their free time. Children ages 8 to 18 typically spend 4.5 hours of TV or computer screening per day leaving them with little to no time for physical activities (CDC, 2017). One of the most important interventions is the promotion of physical exercises among children and a reduction in sedentary activities. The AAP recommends children engage in daily physical activity greater or equal to one hour and limit TV screening time to two hours maximum per day (Daniels & Hassink, 2015).

The conditions of obesity and overweight also develop due to poor nutritional behaviors that manifest through high consumption of calories. Children and adolescents aged 2 to 18 years of age, on average have a daily calorie intake that consists of 40% more than the recommended 5% to 15% added sugar and fat. This excess level is typically found in foods such as pizza, soda, and whole milk (CDC, 2017). It is recommended that providers review dietary practices of children to ensure that children avoid or reduce the intake of fatty, sugary, and high-energy food

materials that contain high calories. The AAP (2015) recommends children consume 5 or more servings of fruits and vegetables daily, increase water intake per body weight, limit fast foods and eat mainly at home where caloric intake can be more easily controlled.

Obesity has been shown to have a correlation with short hours of sleep. Children age four and older should get about nine hours or more of sleep per night (Daniels & Hassink, 2015). These changes could help burn excess body fats that cause overweight and should be part of the recommendations made in pediatric practices. Further, children who have sufficient sleep are less prone to excessively snacking on high calorie foods in the evening.

Additional treatment recommendations including activities to monitor and manage care in primary care practices are suggested interventions. Although pharmaceutical therapy in primary care is not recommended in the treatment of childhood overweight and obesity, in some patients bariatric surgery referrals could be considered. Experts suggest obtaining a lipid profile annually in all children and adolescents between ages 9 to 11 years and 18 to 21 years of age to rule out genetic dyslipidemia. Blood pressure should be screened at every visit. The initial treatment for childhood overweight and obesity in a primary care practice is obesity counseling which includes review of BMI, review of abnormal vital signs such as increased blood pressure, assessment of patients' and families' willingness to change, education on lifestyle modifications, and discussion of the treatment plan. If there is no improvement in BMI after 3 to 6 months, then the primary care provider should refer patients to a multidisciplinary obesity care team for more intensive weight management (Barlow et al., 2007).

Summary and Strength of the Evidence

Childhood obesity costs the U.S. government an average of $14 billion annually. Adulthood obesity costs the same government between $147 billion and $210 billion yearly

(Totura, Figueroa, Wharton, & Marsiglia, 2015). Over 61% of obese children continue to be in that condition in adulthood. As such, childhood obesity has profound repercussions for the health of the individuals and the overall economy of a country. Totura et al. (2015) explain that schools have proved to be the most effective places to initiate intervention on childhood obesity. Policies that restrict the access of children to beverages and foods with high sugar and fats have proved useful in decreasing the consumption of the substances during the school day. WHO (2012) reports the results of a 3-year school-based intervention (involving physical activity and nutrition education) in two urban schools in Beijing, China. The action revealed a significant decline in the prevalence of obesity and overweight in intervention schools than in the control institutions. At the end of the study, overweight children in intervention schools were 9.8% against 14.4% in the control group. Furthermore, obese children in the intervention group were 7.9% compared to 13.3% in the control sample.

On a national and state level, one of the approaches to preventing childhood obesity is the adoption of policies allowing taxation and subsidies for food materials (WHO, 2012). This approach developed from the idea that increasing the cost of unhealthy food reduces their consumption while lowering the price of healthy food materials encourages their intake. WHO (2012) examined the longitudinal research on the relationship between food consumption and prices, and affirmed the effectiveness of tax and subsidies on foods to reduce obesity. Increases in the cost of unhealthy foods motivates a decrease in their consumption. In comparison, the implementation of programs to reduce the cost of healthy food in the United States increased their consumption to 78% (WHO, 2012). Similar studies have suggested that a combination of tax increases and reductions in unhealthy and healthy foods respectively can stimulate the intake of healthy food ingredients, especially among the low-income population.

On a community level, healthy eating established in early childhood is crucial in maintaining lifelong healthy eating habits, and primary and pediatric practices have an important role to play in helping families adopt healthful practices. Wifley, Kass, and Kolko (2013) reported 71% of primary care providers (PCPs) engaging in discussions with patients and families about weight management but only 17% provided adequate tools for change. Healthy People 2020 and AAP provide the best available evidence for several benchmarks needed to combat childhood overweight and obesity. The document includes action plans from the national level to the health care sectors. It encourages primary care providers to engage in prevention of childhood overweight and obesity by early screening and counseling about risk factors associated with obesity. Clinic A routinely tracked BMI but did not provide adequate evidence-based counseling, guidance and/or resources or any obesity prevention efforts to the community. Primary care providers should routinely track the patient's BMI, provide necessary evidence-based counseling and guidance, and positively impact the community to make obesity prevention efforts (U.S. Department of Health and Human Services (2014). After an increased BMI in a child is determined, the provider should communicate the importance of intervention with family and provide relevant resources to allow informed decision-making. An intervention plan should be created based on the patient's needs. Although no precise standard of care for the guidance and counseling of childhood obesity delivered in primary care settings exists, obesity counseling should target nutritional status, physical activity, behavioral modifications, and a motivational plan (U.S. Department of Health and Human Services, 2014). The AAP suggests using the Fifteen-Minute Obesity Prevention Protocol, which covers five necessary steps for childhood overweight and obesity management in primary care settings (Barlow et al., 2007). The steps are as follows:

- Measure weight and height and convert to BMI percentile and go over Health Habits form with patient and parents.
- Make a plan with patient and parents to target behaviors that need to be changed, starting from the easiest to the most difficult.
- Evaluate how ready and willing patient and parents are for change.
- Summarize all findings, make a goal, give materials to support goal and document.
- Lastly, schedule follow-up visit.

Dietary and Physical Activity Management of Obesity

Although childhood obesity remains a public health issue, primary care providers are resources for the community and should mobilize various aspects to address the problem. Age should be considered while managing obesity in children (Hammig & Jozkowski, 2015). Dietary recommendations and physical activity approaches for patients and families are necessary and a starting point for managing and controlling childhood obesity. Clinicians from the Obesity Medicine Association created a Pediatric Obesity Algorithm which provides evidence-based guidance to health care providers in clinical practice, research, and education for the diagnosis and treatment approach of childhood obesity (Cuda & Censani, 2019).

For children ages 0 -24 months of age, it is recommended to breast feed the first 12 months of life. Providers should promote breastfeeding in infants up to two years of age because breastfeeding promotion is shown to reduce the development of lifetime obesity (Daniels & Hassink, 2015). Juice or sugary beverages should be restricted in infants with obesity. It is advised not to force foods when the child shows signs of refusal (Cuda & Censani, 2019). For ages 2–4 with obesity, three meals and two snacks are ideal per day. No juice or fast food should

be given to them. Parents are encouraged to model healthy habits and behavior for the children at this age. Screen time should be kept to a minimum and not substituted for moderate physical activity (Cuda & Censani, 2019). For ages 5 to 9 years with obesity, three meals and 1-2 snacks per day are recommended. They should be offered three servings of protein, two servings of dairy, two servings of fruits, four to five servings of green leafy vegetables and dessert only on special occasions (Cuda & Censani, 2019). Moderate to vigorous activity for 1 hour or more a day is also suggested. It is advised to eat all meals at the table to promote parental role modeling and behavioral change. Active play such as sports, walking, dancing, jump roping is recommended for children ages 5 to 12 years (Cuda & Censani, 2019). For older children and adolescents with obesity, skipping meals should completely be avoided because it leads to overeating during the next meal. Three meals and two snacks each day should consist of three servings of protein, two servings of dairy, two servings of fruits, four to five servings of green leafy vegetables and dessert only on special occasions (Cuda & Censani, 2019). Children and adolescents in this era are very technology savvy and are encouraged to utilize that in the management of obesity. Older children and adolescents are encouraged to track their meals and activity with their smart devices. Regular moderate to vigorous activity, about 60 to 90 minutes per day, should be implemented in their daily lives which would potentially improve cardiovascular health and decrease manifestation of metabolic syndrome (Cuda & Censani, 2019). Primary care providers should make it a practice in conjunction with clinical judgment, to prescribe these essentials to patients and families as a treatment for obesity (Styne et al., 2017).

Family Involvement

According to Ash, Agaronov, Young, Aftosmes-Tobio, and Davidson (2017), many study reports published from 2008 to 2015 have certified the effectiveness of a family-based obesity

prevention approach in children. Ash et al. (2017) elaborate that the effectiveness of the strategy attributes to the fact that parents and families have a significant role in determining the lifestyle (including food purchases and consumption practices, sedentary lifestyle, and physical activities) for children. Obese children see PCPs at least annually if not more often and this should be an opportunity for PCPs to counsel patients and family about lifestyle modifications. Lifestyle modifications should include an increased intake of fruits and vegetables, limits on sugary beverages, eating breakfast daily, limits on fast foods, eating out less, increased water intake, increased physical activity to 60 minutes or more per day, limiting to a maximum screen time of 2 hours daily, and promoting eight hours or more of sleep per night (Daniels & Hassink, 2015). PCPs should encourage and support families in understanding how and what needs to be done to combat childhood overweight and obesity.

To support families with young children, federal and state programs have emphasized promotion of healthy lifestyles in their agendas, with some success. Specifically, the CDC reports childhood obesity has improved among Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants. In 2010 to 2014, 34 of 54 WIC participating states have shown decreases in childhood obesity from 15.9% to 14.5% (CDC, 2016a). There are several measures taken at various levels (national, state, community, and family) to enhance this change, such as Let's Move Initiative, CDC Early Care and Education Childhood Obesity Program, and revision of WIC food packages (CDC, 2016a). Integration of two or more programs deemed to be beneficial to children struggling with overweight and obesity, is ideal. Primary care practices are encouraged to stay up to date and actively refer to effective local programs so as to educate and inform their patients and families on various ways to combat childhood overweight and obesity.

At times parents involve other family members in the rearing of their children. Parents and all members of the family should be strongly encouraged to implement these changes as a family. Providers could help families find ways to implement healthy changes together such as setting limits, rewarding good behaviors, providing positive feedback and role modeling (Daniels & Hassink, 2015).

Primary Care Provider's Role

Approximately 60% of adults in the United States are overweight or obese and if they are parents, unhealthy habits might have been passed on to their children (Daniels & Hassink, 2015). PCPs must address health beliefs and factors influencing those health beliefs as a family to maximize success. Within the primary care profession, the USPSTF recommends that patients should be referred to behavioral counseling to promote healthy habits whether diagnosed with an illness or not. Evidence shows that most individuals who are ready for change are most likely to benefit from behavioral counseling (USPSTF, 2017b). Health education and counseling could be time-consuming in a primary care setting, therefore non-physician providers that are practice-based or community-based, culturally competent, trained professionals (e.g., health coaches, health educators, and nurses) should be allocated roles in obesity counseling (Bodenheimer & Smith, 2013).

Well child visits are a great opportunity for providers to provide health education counseling. According to the research study of 4,837 families by Hammig and Jozkowski (2015), among the five areas of education primarily targeted in well child visits (injury prevention, nutrition, exercise, tobacco use, and weight reduction), nutrition education was the most prevalent in well child visits. The patients that the providers spent 20 minutes or more with during their visit had a higher chance of receiving more thorough education on all areas than

those with less than 20 minutes (Hammig & Jozkowski, 2015). Although time in a primary care clinic is very limited during visits, the more time spent with the patients and families during a well child visit increased the level of engagement given by families to the importance of these topics. Given that the effectiveness and success of a primary care setting obesity counseling is limited, this study shares similarities in components discussed with the Fifteen-Minute Obesity Prevention Protocol (FMOPP). Although, FMOPP has little to no validity formally established, it embraces all the necessary components and is organized into an easy, quick format that allows the providers to do the protocol in a short period of time. All the subcomponents, such as recommendations on healthy eating, physical activity, screen time, sleep time are explored.

Experts from several national health organizations such as American Medical Association (AMA), AAP, Health Resources and Service Administrations and CDC, gave recommendations on how primary care providers should proceed in the prevention, assessment and treatment of obesity. The Expert Committee, as it was called, was selected due to members' proficiency, specialty and expertise in working with children with obesity, obesity-related conditions and/or the treatment of obesity (Barlow et al., 2007). The comprehensive article published by this group of experts carries the most current evidence-based guidelines and recommendations for the management of childhood obesity. Throughout the extensive summary of literature and evidence, it was realized most articles on the management of childhood obesity utilized the Expert Committee recommendations in devising their own guidelines and practices, yet few research studies were conducted or reported on tools and processes used by providers that worked or did not work for the treatment of childhood obesity.

Over the decades, policies and strategies for child health and wellness emerged in various sectors focused on childhood obesity. A leading pediatric provider in Delaware started an

initiative with one of the practices interventions being learning collaboratives to provide tools, training, and technical assistance to implement the 2007 and ongoing Expert Committee recommendations in primary care practices statewide, potentially impacting a total population of 33,000 children (Chang, Gertel-Rosenberg, Drayton, Schmidt, & Angalet, 2010). At the end of the 2-year administration in Delaware, although the prevalence of overweight and obesity showed no significant difference, there was a significant increase of healthy eating and physical activity awareness throughout the state (Chang et al., 2010). Children that exercised for more than 1 hour went up from 10% to 26% and moderate to vigorous physical activity for more that 20 minutes rose from 21% to 33% (Chang et al., 2010). Eighty-one percent of participation centers attested to its effectiveness. A huge decrease in the amount of time spent on TV or computer screens was noted. An increase in the consumption of vegetables and fruits was seen (Chang et al., 2010). It is also important to note that the Expert Committee recommendations were supported and promoted as a guideline for primary care systems nationwide.

In addition to diet and physical activity counseling, the Expert Committee recommended the utilization of motivational interviewing as a counseling tool. Motivational interviewing techniques could be used when speaking to patients and families about readiness to change. Motivational interviewing utilizes nonjudgmental questions, simple language, reflective listening, and the family's values and its importance in comparison to their current health practices (Barlow et al., 2007). An example of motivational interviewing would be saying to the parent: "Your child's BMI is above the 95th percentile, which means he/she has gained extra weight. What concerns if any do you have about his/her weight?" The provider then works from there to identify possible strategies that match the parent's concern and capability (Barlow et al., 2007). Simple questions and explanations like that could improve the patient/family and provider

relationship rather than simply stating their current practices need change. A cluster randomized controlled trial study of 1,355 families reported that although motivational interviewing had no effects on the children's BMI or physical activity habits, it had a small positive effect on healthy eating habits (Doring et al., 2016). Patients and families in the interventional group reported that their children consumed more vegetables, reduced sugary drinks, and consumed less junk food compared to the control group (Doring et al., 2016). Another research study of 185 obese children in United Kingdom grades 5 and 6 by Wong and Cheng (2013) showed that motivational interviewing could be a great tool in the treatment of childhood obesity. A reduction of 0.67 in mean BMI was seen after the 14-week study period (Wong & Cheng, 2013). This is to say that consistent motivational interviewing could internally bring about change in habits rather than forced change on patients and families.

Medical assessment of patients is also an essential part of identifying and diagnosing obesity. Providers must assume the responsibility to educate patients and families on the findings of the review of systems associated with obesity and their possible health risks (Barlow et al., 2007). Patients and families should understand for instance what it means to accumulate central adiposity or if one's child is not getting enough sleep that it could lead to poor school performance and daytime sleepiness. Although PCPs are aware of the importance and benefits of early obesity screening and weight management counseling in primary care settings, they expressed that it was a very complex and time-consuming problem, and therefore could not be solely managed by PCPs (Rhee et al., 2018).

In conclusion, several guidelines and articles recommend initial counseling to target areas such as diet, physical activity, counseling, and parental involvement and, lastly multidisciplinary obesity care team for management of childhood overweight and obesity. These should be

implemented in all primary care practices that see children, and thus were relevant to Clinic A which had a demonstrated need for improvement in its management of childhood obesity.

Methods

Project Intervention

The premise of the project was that proper primary care intervention could control and reduce childhood overweight and obesity. Ideally multiple agencies converge to provide opportunities for families to prevent and/or manage their child's obesity. However, the primary health care provider had a critical role and responsibility in addressing the health problem. The quality improvement project was an educational and practice intervention aimed at improving the primary care practice's management, including providers' provision of obesity guidance to patients and their parents.

Setting and Population

The project took place in a private, freestanding primary care setting (Clinic A). The clinical site, located in Houston, Harris County, Texas was a family practice clinic that offered preventative and specialized services for all ages but with a large segment of children, 23.2% of which were obese or overweight. The project personnel included the DNP student project coordinator, the clinical mentor, the five nurse practitioners and medical providers, the medical assistants, the office manager, and the receptionists.

Before the start of the project, clinic procedures for managing childhood overweight and obesity involved initial measuring weight, height and calculating the body mass index (BMI) that identified children who needed intervention. Based on documentation and observation, less than 10% of children and parents received subsequent comprehensive obesity counseling and guidance. On a given day, only one provider consistently offered counseling to all her pediatric

patients, that is to approximately seven out of seven patients. Documentation of obesity counseling by the other five providers who typically see four to five pediatric patients per day, was absent. The project was designed to improve the management of obesity by providers and included provision of brochures and handouts for providers to increase parent and child awareness on childhood overweight and obesity. The project adapted the AAP standard of care for obesity screening and counseling to improve the communication of results. Although Clinic A has proven sufficient in obesity screening, counseling about the results of obesity screening were included in the intervention as it sets the stage for change and readiness to address the problem. Interventions were done to promote an efficient set of steps for obesity counseling and management in the primary care setting, and to encourage appropriate referrals for more in-depth fitness and nutritional education.

The Intervention: Improving the Process of the Patient's Visit

In order to assure the proposed office visit conformed to the AAP guideline and recommendation for effective obesity management, the DNP student project coordinator implemented the steps below to assist the providers and the medical assistants to transition to a more therapeutic visit. The intervention entailed an educational component for staff as well as the improvement of clinical processes. There were six new processes implemented as part of the quality improvement project. Prior to the implementation of the quality improvement project, a pre-intervention provider and staff knowledge questionnaire was provided.

Table 3

Steps for Intervention

Objective 1.To increase the percentage of children and adolescents ages 2 to 19 years who are obese or overweight, seen in Clinic A, who received adequate weight management and obesity counseling, to 75%.
Step 1. Implemented two (2) informative group sessions for all staff about screening for childhood obesity.
Step 2. Hosted four (4) 15-min. educational sessions for the providers outlining the Fifteen-Minute Obesity Prevention Protocol (FMOPP).
Step 3. Provided Fifteen-Minute Obesity Prevention Protocol and Health Habits handouts to staff and providers.
Step 4. Increased availability of resources for parents.
Step 5. Worked with providers and staff to determine best media use in the waiting area.
Objective 2.To increase the number of referrals to the weight management care team and improve the referral process in the patient population ages 2 to 19 years.
Step 1. Gathered information from Texas Children's Hospital on available programs offered.
Step 2. Developed Texas Children's Hospital informational brochure.
Step 3. Presented information to providers/Oriented providers to the brochure content.
Step 4. Developed an effective system for documenting referrals and follow-up.

The steps for intervention were implemented according to the objectives. The intervention for the first project entailed implementing informative group sessions for all staff about screening for childhood obesity and introducing the FMOPP (Appendix B) to the providers. Corresponding processes were as follows:

- Step 1: Two informational sessions on two different dates were organized by the DNP student project coordinator with the assistance of the office manager. The informational session consisted of the DNP student project coordinator

reinforcing the tools necessary for screening childhood obesity, including the Healthy Habits form. Healthy Habits form was a form organized with several lifestyle habits designed to help a patient understand their overall well-being. These lifestyle habits are listed in the form of questions for patients and families to answer. About 90% of staff attended either session.

- Step 2: The DNP student project coordinator presented a total of four FMOPP educational sessions for the providers individually outlining the Fifteen-Minute Obesity Prevention Protocol. Although, this was initially planned to be only two sessions, due to the busy atmosphere and different lunch times of the providers, it was difficult to get all the providers in one or two meetings. The DNP student coordinator created and provided handouts on FMOPP for all five providers as it was explained to them. All five providers commended the efforts shown on improving childhood obesity in Clinic A.
- Step 3: During the informational sessions and educational meetings, the FMOPP and Healthy Habits handouts were printed and provided to the staff and the providers.
- Step 4: At the beginning of every week at Clinic A, the DNP student project coordinator printed and provided the Healthy Habits form in English and in Spanish. The Spanish version was created and back-translated with the help of a medical assistant who had an educational minor in Medical Spanish. Resources on healthy eating and habits were printed and made available to the staff and providers to hand to patients and families at the end of the visit.

- Step 5: the media use in the waiting room remained the same after consultation with the office manager and due to the fact that Clinic A was not a solely pediatric clinic but a family clinic serving all age groups. Step 5 was explored with the office manager and management and determined it was not feasible to change at this time. However, the television channels provided were manipulated to fit the interest of the majority at a given time in the waiting room and did not necessarily address health-related topics.

The second objective's activities entailed visiting the preferred weight management care team at Texas Children's Hospital, to gather resources on available programs offered, developing the referral information and resources in a presentation format and presenting it to the providers. The fourth new process in this project consisted of the following steps:

- Step 1 and 2: the DNP student project coordinator on six different occasions visited several locations of the Texas Children's Hospital in the Houston area, and assembled information on available programs that offered weight management. Although, Texas Children's Hospital did not provide any brochures, the information gathered both on site and online were put together and developed into an informational brochure about the program offered at Texas Children's Hospital, and their different locations, opening days and times, phone numbers, and names of participating providers. Of note, getting to Texas Children's Hospital was determined to be challenging for families for a couple of reasons which included the need for paid parking, parking not located next to the clinic, and the clinic location not properly labeled on the electronic office directories located in the building, next to the elevator.

- Step 3: After the brochures were created, it was printed in color and provided to Clinic A. The DNP student project coordinator presented the information to the providers and oriented them on the brochures' content (Appendix F). The providers expressed their gratitude and how helpful they were to the patients and families.
- Step 4: At the end of the office visit, the providers made the referrals to Texas Children's Hospital weight management team, but no follow-up system was in place. Although, the referrals were successfully documented in the EHR after the referral form had been signed by the provider and faxed, the follow-up system had not been previously accomplished due to the lack of staff. Designating a specific staff member to complete all follow-up could not be achieved. The second objective created a partially effective process for referrals given to patients and families, and follow-up by staff.

In summary, the intent of these objectives was to maximize provider and staff awareness and knowledge of the AAP standard of care recommended for childhood obesity counseling and management, in order to provide optimal care leading to better patient outcomes.

Prior to the intervention, the usual process of care experienced by the patient upon entering the clinic, began when the receptionist checked the patient in. The medical assistant (MA) then called the receipted patient into the assessment area where the weight and height were collected and converted to BMI. The weight was measured with the industrial weight scale while the height was measured with the wall-mounted stadiometer. The EHR computer system calculated the BMIs. The vital signs (blood pressure, heart rate and temperature) and reason for visit were collected as well. Patient information was inputted into the EHR. The MA noted the

increased BMI. If the BMI exceeded the 85th percentile, the MA circled or highlighted the BMI to draw the provider's attention to it.

The fifth new process implemented as part of the DNP project, began when the MA handed the patient and family the Healthy Habits form (Appendix A) to fill out once they were placed in an available room. Healthy Habits form is a form organized with several lifestyle habits designed to help another understand one's overall well-being. These lifestyle habits are listed in the form of questions for patients and families to answer. All patients completed the Healthy Habits form, but obesity counseling was only conducted for the patients whose weight was in the 85th percentile and over. The MA printed the patient's record cover sheet, which contained the vital signs, BMI, growth chart, reason for visit, and pertinent health history. This printed patient information was handed to the provider, who then noted the increased BMI of greater than 85th percentile. The provider reviewed the electronically plotted growth charts for patients with BMIs greater than 85th percentile, on the Practice Fusion Growth Charts currently used in Clinic A. The provider proceeded to the patient's room to complete the visit. The provider took into consideration the patient's family medical history, the patient's previous BMI pattern, and current health history before initiating intervention. Additionally, the provider employed professional judgment when assessing the patient's obesity status because there is no practical way to distinguish increased body fat from increased muscle mass (Barlow et al., 2007).

The sixth revised process began when the provider reviewed the growth and BMI charts with the patient and parents, educated them on what the norm should be, and then progressed to the FMOPP (Appendix B) (Barlow et al., 2007). The FMOPP covered five steps which were implemented as follows:

1. The provider reviewed weight and height converted to BMI percentile and reviewed the Health Habits form with patient and parents.
2. The provider made a plan with patient and parents to target behaviors (obesity components) that needed to be changed, starting from the easiest to the most difficult. This was written on patient's printed cover sheet.
3. The provider evaluated how ready and willing patient and parents were for change.
4. The provider summarized all findings, made a goal in consultation with the patient and family, gave materials to support the goal and documented on the patient's cover sheet and EHR.
5. Lastly, the assigned MA scheduled a follow-up visit and possible referral to Texas Children's Hospital weight management care team.

This final process was modified by each provider as they presented it to the patients. It was not stated word for word but covered each of the important steps.

In summary, the expected outcomes of the intervention were mainly aimed at creating healthy habits, reducing the BMI of overweight and obese pediatric patients, and ensuring that these patients received the optimal level of care possible. Because providers do not have time for in-depth dietary counseling the referral to Texas Children's augmented the care that the clinic could provide. So, an expected outcome was an increase in the number of referrals made to a weight management care team. Texas Children's Hospital was contacted to donate any pertinent handouts to manage childhood overweight and obesity especially for those who do not complete the referral or who are ineligible for care in the weight management clinic. Available online resources about obesity management were provided by Texas Children's Hospital and were re-

designed into handouts and supplied to the clinic by the DNP student project coordinator. This lessened the burden of the clinic's funding them. The project was implemented as planned between Feb 02, 2019, to May 5, 2019.

Ethical Considerations

The University of the Incarnate Word Institutional Review Board (IRB) approval was obtained prior to initiating the DNP project. The project entailed a change in the usual process of care and did not involve interventions with patients. The DNP project was exempted from IRB Review, and was evaluated as a quality improvement project. A determination letter from the IRB was obtained and submitted. With Health Insurance Portability and Accountability Act and the AAP standard of care in mind, patient records were handled with confidentiality and privacy. All data collection was aggregated to eliminate any specific patient's identifiers. One positive ethical consideration identified was that because the standard of care was not being met prior to the start of the project, the project benefited clients' health while not causing them any harm. The DNP project coordinator and clinic providers abided by standards of care for practice in a primary care clinic setting. All files were electronically accessed which was secured with username and password for only authorized users. No data with identifiers left the premises of the clinic.

Evaluation of the Intervention

Evaluation of the outcomes was very important to determine the success of the project interventions. There were seven indicators of success listed in Table 4 that show the results of intervention. Evaluation of activities are presented according to the two objectives of the project. The evaluation plan involved evaluating the major steps taken by DNP student project coordinator to implement the interventions (Table 4). The DNP student project coordinator used

an obesity management checklist (Appendix C) to evaluate the quality of office visits that targeted obesity counseling and management. Quality was indicated by the number and percent of the six key components that were completed at each visit as documented in the EHR. Documentation of these critical elements at the visit afforded measurability of the outcome. Items were tallied and averaged for each visit and each provider to indicate improvement from baseline. Pre- and post-intervention provider and staff knowledge questionnaires found in Appendix D and E, were used to assess pre- and post-knowledge and confidence in applying the AAP criteria in clinical care as indicated by the questionnaires. These were completed by the providers and staff in order to measure improvements in the knowledge outcome. The three and four item questionnaires were tallied up for each individual and sum scores were used to indicate an increase in post-intervention knowledge compared to pre-intervention knowledge.

Results

The quality improvement project lasted a duration of 16 weeks. There was a total number of 54 participants including children, parents, providers, and medical assistants. The participants included 20 children/patients who were identified as overweight or obese, and 22 parents/family members and who were seen at Clinic A during the intervention period. There were 7 (35%) out of the 20 pediatric patients who had a BMI between the 85th and 95th percentile, and 13 (65%) patients out of the 20 with a BMIs over the 95th percentile. Eighteen patients (90%) self-identified as Hispanic and the remaining two (10%) as African American. Seventeen (85%) out of the 20 pediatric patients were on Medicaid and 3 (15%) had private insurance. This could indicate that they were from low socioeconomic backgrounds, and also potentially eligible for a Texas Children's Hospital referral. All patient participants were overweight and obese children seen during the intervention phase (February through May) of the project. Staff participants

consisted of seven medical assistants, two clerks, and an office manager. Provider participants included five providers (nurse practitioners). Five out of the seven clinic providers attended the education session. Results were based on these five providers who participated in the quality improvement project. Two of the clinic providers were on maternity leave during the implementation phase and therefore were excluded from the analysis.

The first objective was to increase the percentage of children and adolescents ages 2 to 19 years who were obese or overweight and seen in Clinic A, who received adequate weight management and obesity counseling, to 75%. The first objective was met at a percent change of 800%. The objective had five subcomponents that supported the objective including information sessions for staff, and for the providers to improve knowledge of AAP standards of care and the use of the FMOPP and Healthy Habits form by providers. The intervention was successful in implementing these five subcomponents in Clinic A. See results in Table 4 above. All available staff attended the information sessions including the office manager and clerks. The pre- and post-knowledge of AAP standard of care for the providers and staff was tested by the Pre and Post Knowledge Questionnaire (Appendices D and E). Pre-intervention, three of the five providers' scores indicated that they did not have adequate knowledge of AAP standards of care and available resources on childhood obesity counseling and management as indicated by scores of 69.3% which was less than the desired 80% which would indicate adequate knowledge levels. Post-intervention, all five providers utilized the FMOPP and Healthy Habits form while counseling their patients whereas previously one provider (10%) implemented obesity counseling with children and their parents. In evaluating Objective 1, pre-intervention, approximately 10% of children received adequate weight management and obesity counseling. Post-intervention, 90% of the 20 pediatric children with BMI's over the 85th percentile had

Table 4

Evaluation and Results

Criteria	Pre-Intervention (Baseline)*	Post-Intervention**
Objective 1. To increase the percentage of children and adolescents ages 2 to 19 years who are obese or overweight seen in Clinic A, who received adequate weight management and obesity counseling, to 75%.	1 out of 10 (10%)	18 out of 20 (90%)
Informational session attendance for staff	N/A	7 out of 7 (100%)
Educational session participation of providers	N/A	5 out of 5 (100%)
Clinical staff knowledge of AAP standard of care (avg. of mean scores)	7 out of 7 (30.8%)	7 out of 7 (69.3%)
Clinical provider knowledge of AAP standard of care (avg. of mean scores)	5 out of 5(69.3%)	5 out of 5 (100%)
Office visits in which providers used 15-minute prevention protocol	1 out of 10 (10%)	18 out of 20 (90%)
Educational materials available in clinic	No	Yes
Office visit in which patients completed the Healthy Habits form	0%	20 out of 20 (100%)
Objective 2. To increase the number of referrals to the weight management care team, and improve the referral process in the patient population ages 2 to 19 years.	1 out of 10 (10%)	15 out of 20 (75%)
Children w/BMI ≥ 85th percentile received referral to weight management care team	1 out of 10 (10%)	15 out of 20 (75%)
Parents were given Texas Children's Hospital information	0%	15 out of 20 (75%)
Texas Children's Hospital faxed patient's notes from referral program to clinic A	0%	1 out of 20 (5%)

*Data derived from pre-intervention needs assessment pediatric patients with ≥ 85th percentile BMI seen in Clinic A from November 2018 to January 2019.

**Data based on the total number of pediatric patients with BMI ≥ 85th percentile and seen in Clinic A from February to May 2019.

obtained adequate weight management and obesity counseling as determined by 100% utilization of the Healthy Habits form and 90% of obesity counseling and management components/checklist performed by all five providers. The average amount of face-to-face time between the provider and patient was 18.5 minutes compared to pre-invention of 10 minutes, making an average increased visit time of 8 minutes. This is time in which the provider did the obesity counseling and management.

In Appendix C is the obesity management checklist which was used to document how many obesity management components were discussed by the provider for each patient, as evidenced by documentation in the electronic records. The highest possible score on the obesity management checklist was six for each patient as the obesity management checklist contained six components including sleep, diet, physical activity, weight management, screen time and referral. Three or more components of the obesity management components were documented for 18 out of the 20 (90%) of the patients. Diet, and physical activity were discussed most frequently during the office visits compared to referrals to weight management clinic, sleep recommendations, and restricting screen time. This finding was not entirely surprising given that diet and exercise have been deemed to be the most effective treatment for obesity (Falvo, Hite, & Eid, 2018). Diet and physical activity were discussed with 18 patients (90%) compared to only 13 (65%) patients who received advice for sleep time in the 20 obese or overweight patients. This discernable pattern in the components addressed (diet and physical activity) was notable in the obesity counseling and management given by the providers. The reduced number of patients who received sleep guidance was due to providers neglecting to mention the topic. Furthermore, families rarely raised sleep as an issue, when for example patients and families were asked about target behaviors that they wished to work on. Providers later suggested that the reduced

discussion of sleep hours mentioned could relate to parents' lack of awareness that sleep impacts weight. Figure 1 shows the findings from the utilization of the Healthy Habits form compared to the number of obesity components were discussed by the providers with each patient. The Healthy Habits form was well utilized because all 20 patients with the assistance of their 22 family members filled out the form and handed it to the provider to go over with them. The Healthy Habits questionnaire was used more frequently than the FMOPP guideline. The Healthy Habits form (Appendix A) was part of the FMOPP guideline (Appendix B). A successful completion of the Healthy Habits form by the patient and family member was all that was needed for evaluation while the FMOPP contained several parts that needed to be completed by the provider for proper evaluation. The Healthy Habits form was a more straightforward element to complete, and thus tended to be completed more frequently by patients than the providers' more complex six component FMOPP protocol, therefore producing higher evaluation percentages. The Healthy Habits form seemed a more effective tool in part because it took less time and was more frequently completed. However, the FMOPP did allow for more in-depth discussions. Therefore, their use in tandem was likely an ideal approach in a clinic.

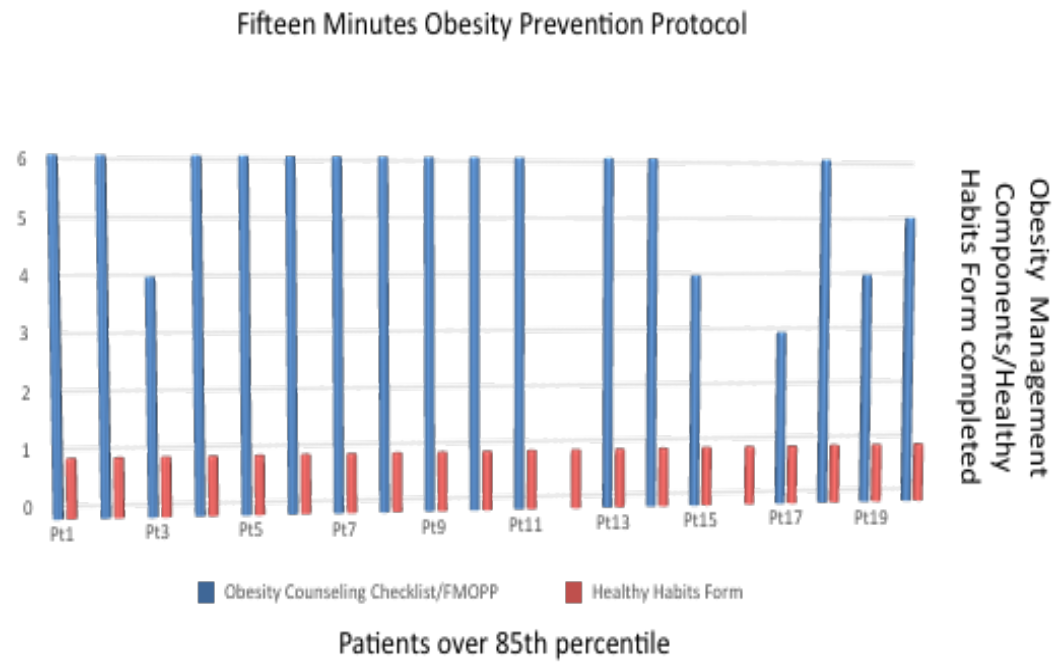

Figure 1. Fifteen-minute obesity prevention protocol.

The second objective was to increase the number of referrals to the weight management care team and improve the referral process in the patient population ages 2 to 19 years. The first objective was met and produced a 650% increased change. During the office visits, 15 out of 20 (75%) of the overweight and obese children post-intervention received a referral to Texas Children's Weight Management Clinic. In evaluating Objective 2, pre-intervention, approximately 10% of children received referrals to Texas Children's Hospital. Post-intervention, the rate increased dramatically such that three quarters of children (75%) with BMIs over the 85th percentile received referrals to Texas Children's Hospital either by fax and/ or handed to the patients and families as determined by EHR review. After the referrals were initiated, patients and families should have received Texas Children's Hospital brochures. All of the 15 patients that received the referrals, also received the Texas Children's brochures. Out of the 15 referrals made, only one (5%) patient's medical record indicated they had initiated a visit to the Texas Children's Hospital as indicated by follow-up notes received from the referred

clinic. The number of referrals increased among all participating providers, however little to no feedback or Texas Children's Hospital follow-up notes were received from the referred weight management care team. This suggests that although referrals were increased, actual specialty care likely was not obtained by clinic children.

Discussion

The project findings indicate that improving the management of childhood obesity in a primary care clinic is possible and could be successfully achieved through the leadership of the Doctoral of Nursing Practice FNP graduate student. The quality improvement project significantly increased the percentage of children and adolescents ages 2 to 19 years who received adequate weight management and obesity counseling, as well as referrals to a weight management care team. The important successes in implementing the intervention include the enhanced awareness of childhood obesity management, improved collaboration between the staff and providers in adapting evidence-based guidelines and thirdly, increased quality in the care received by the clinic pediatric patients.

Through several discussions with the staff and based on the pre-intervention questionnaire survey, most staff stated that they did not know much about the AAP guidelines in managing childhood obesity other than the identification of increased BMI and alerting the providers. Post-intervention, the staff became more knowledgeable about the steps in managing childhood obesity. A few of the staff members expressed the impact that FMOPP had on the practice, stating that "we might not be licensed to discuss all the steps but knowing an overview of the steps can keep us on track with obesity management". Obesity intervention that involves ancillary healthcare professionals such as medical assistants or registered nurses collaborating with the providers in managing the core prevention components, has the potential to provide

more significant results than just the providers alone (Wadden, Butryn, Hong, & Tsai, 2014). Therefore, in the absence of the registered nurse, it was important to include both providers and medical assistants in a comprehensive approach to improving obesity management. The value of increasing the involvement of families was also recognized. Several phone calls were placed to get in contact with the families of patients to receive feedback about the new process and care received from the clinic. Unfortunately, most families spoke mainly Spanish and some did not answer, so few evaluative comments were obtained from parents. Texas Children's Hospital was called, on the other hand, to verify appointment dates and times for patients. They reported that the majority of parents had not yet made an appointment with the weight management clinic.

Although post-intervention, the providers were not following the AAP standard of care completely at all visits, most obesity counseling and management topics were covered. Assessing providers' utilization of FMOPP Steps 1 (assess), 2 (set an agenda), 4 (summarize and probe possible changes), and 5 (schedule a follow-up visit) seemed to be addressed effectively and more frequently than Step 3 (assess motivation and confidence). Providers viewed Step 3 as being problematic because of differences between themselves and their patients' in family culture, morals and values. Some families do not see anything wrong with their children health-wise. Additionally, most providers did not know how to adjust a menu consistent with a Mexican- American diet and therefore the referral to a nutritionist plays an important part in obesity management. Providers also expressed a lack of time to implement these processes in a primary care setting. They therefore valued and continued to employ the assistance of the intensive weight management team. PCPs were willing to discuss weight management with their families and patients with a BMI of $\geq$ 85th percentile, however due to the lack of time, they tended to focus more on more demanding medical issues. Because of these time constraints

weight management does not get sufficient attention in primary care (Fitzpatrick et al., 2016). With up to 25 to 40 patients assigned to a provider on a single day, and with six to seven of them being children, it is often impossible to allot more than 15 minutes of face-to-face time per patient for obesity counseling.

Implementing a project, especially one that entails an educational component aimed at providers, can also be difficult given the time pressures of a clinic with a large number of patients and a tight schedule. Clinic A is a busy clinic that operated Monday through Sunday; therefore, it was challenging to get all staff and providers to attend the informational and educational sessions. The main changes observed during and post-intervention were the increased number of referrals made by providers to Texas Children's Hospital for the intensive weight management. The quality improvement project gave an opportunity for the doctoral student nurse to evaluate current clinical practices against guidelines and standards of care, and to exercise several roles such as leader, change agent and evaluator of care. The American Association of Colleges of Nursing (AACN) Essentials of Doctoral Education placed the graduate student in a position to assume several roles, and will continued to provide opportunities and open doors in the healthcare system. The eight AACN DNP Essentials were integrated into accomplishing this project from conducting a comprehensive and systematic assessment of a health condition, designing, implementing and evaluating therapeutic interventions, to leading and collaborating with interprofessional teams (AACN, 2006).

Limitations

The most common organizational barrier identified was the lack of time. The time constraint in office visits did not promote the providers in-depth discussion of obesity counseling and management. This has the potential to reduce the quality of care that patients receive, and the

long-term outcomes of the intervention and the overall sustainability of obesity counseling and management in the practice. Another barrier was the lack of obesity care-related training. Providers do not get any specific training on strategies to better help children with weight management such as motivational interviewing or parenting techniques (Rhee et al. 2018). Patient and families are often not motivated enough to pursue obesity management, and thus require skilled providers who can complete detailed assessments and develop tailored strategies that will truly help families adhere to obesity management approaches.

As stated above, most parents did not recognize their children's overweight or obese status so therefore they did not appreciate the health risks their child faced nor identified the need for intervention. The lack of staff to implement the project intervention, a lack of referral follow-up, and a question about the sustainability of effort over the long term, constituted potential barriers to the success of the project. With the increased workload, staff and providers could potentially abandon these interventions over time. During the intervention phase, two providers (a family medicine physician and a physician assistant) were absent. This created a gap in knowledgeable providers.

Another potential barrier to the long-term success of obesity management in a family practice clinic is the lack of reimbursement for obesity care. It is difficult to take the lengthy time to counsel patients on a chronic condition like obesity, if the clinic time is not compensated. During a discussion with the billing specialist, it was learned that obesity counseling reimbursement could be available if the providers diagnose the patients appropriately and consistently and place the billing codes in the patient's chart at all visits.

The Centers for Medicare and Medicaid Services adult reimbursement guidelines will reimburse up to 22 total visits for intensive behavioral therapy for obesity management provided

by the primary care provider in a primary care setting (Fitzpatrick et al., 2016). However, obesity counseling and management reimbursement remains inconsistent for the pediatric population. For the children on Medicaid and enrolled in Texas Health Steps, obesity-related services and care are covered. Therefore, providers need to complete comprehensive obesity management and seek appropriate reimbursement if children are not to suffer the negative consequences of obesity.

Providers will necessarily need to be current on evidence-based approaches, so that these can be integrated into their everyday practice to yield positive and progressive patient outcomes. These are all barriers the student FNP, the clinic providers, and the practice as a whole experienced, and which the project attempted to overcome.

Implications for Practice

Recommendations and guidelines have been set forth by several governing health organizations, including AAP, on the management of childhood obesity. However, published research about their utilization, successful outcomes, and/or establishment of the validity of the tools and processes included still remains unclear. Although the 2007 Expert Committee recommendations regarding the prevention, assessment, and treatment of child and adolescent and obesity served as a useful package for the PCPs to implement and follow, no research was found exploring or validating it as a total set of recommendations, its impact on obesity rates and/or pediatric providers' everyday practice. However, it was clear that its several subcomponents such as dietary recommendations or exercise guidance, have been well utilized and researched.

Further studies could include implementing the FMOPP in a primary care setting over a longer period of time and compare data pre- and post-intervention as well as assessing the

primary care provides' perception and compliance. Future effort should include teaching PCPs on all necessary steps including the use of motivational interviewing in the management of childhood obesity for an efficient and effective primary care encounter. PCPs show low confidence and proficiency in behavioral management using motivational interviewing and parent counseling techniques and this could create another opportunity for future studies (Fitzpatrick et al., 2016).

Patients and families visit their pediatric providers at least annually for a well child visit. This visit should serve as an opportunity for a robust obesity assessment and prevention, as it should be a routine component of all well child visits (Reyes, 2015). Well child visits should be an opportunity for early identification and intervention. But the question still remains, do well child visits offer enough time to provide obesity counseling and management? However, Hammig and Jozkowski (2015) suggest using supplementary office visits as well as routine visits to resolve this problem, since BMI is reviewed at every visit for all pediatric patients. PCPs should take advantage of every visit to review the patient's BMI with patients and families and address target behaviors. Additionally, providers should research the range of evidence-based approaches to obesity counseling and management to address the issue instead of providing care with limited knowledge. PCPs have a responsibility to be current and offer current interventions, including the FMOPP approach.

Finally, although providers understand the importance of early weight management and obesity counseling, intensive weight management care teams need to be employed for better patient outcomes. The doctorally-prepared nurse practitioner role brings evidence-based care and a focus on patient outcomes, not only in intervention development but to the practice itself. The AACN educational standards prepares the DNP nurse practitioner to become a clinical nursing

expert, and a leader of care in the practice. An FNP with an advanced degree can assist the provider to recognize significant clinical gaps and challenge the current inefficient standard of care.

Conclusion

Childhood obesity is a serious health issue that not only remains a primary care concern but a public health issue. Nurse practitioners and other providers are essential in managing obesity at different levels. Providers should adapt available and current evidence-based guidelines and approaches to aid in the management of obesity. The FMOPP is a very useful protocol that targeted areas such as diet, physical activity, healthy habits, parental involvement and, lastly multidisciplinary obesity care team for management of childhood overweight and obesity. FMOPP worked for Clinic A because it was succinct and easy to follow. These initiatives should be further validated and then implemented in all primary care practices that see children. Continuing to reinforce the approaches used in this project at Clinic A which has a demonstrated need for improvement in its management of childhood obesity, would be beneficial in a community where obesity is at epidemic levels. The doctorally-prepared nurse practitioner is ideal for assuming a leadership role in further research, reducing the prevalent and increasing the management of childhood obesity.

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Appendix A

Healthy Habits Form

Circle one answer for each question. There is no right or wrong answer.

1. How many days a week do you **eat breakfast**? A. 7 days B. 5-6 days C. 3-4 days D. 2 days or fewer
2. How many **fruits and vegetables** do you eat in a day? A. 5 or more a day B. 3-4 a day C. 1-2 a day D. Usually none
3. How often do you eat **"junk" foods** for snacks between meals? This means chips, cakes, candy, cookies, ice cream or other similar food. A. Seldom or never B. A few times a week C. 1-2 times a day D. 3 or more a day
4. How many **meals do you eat out at a restaurant or take out** each week? A. 1 or fewer B. 2-3 meals C. 4-6 meals D.7 or more meals
5. How much **regular soda, sugary juice** or **sweetened drinks** do you drink in a day? 8 oz. equals 1 cup of Coke, Pepsi, 7UP, Gatorade, Kool-Aid, or other similar drinks. A. Less than 1 cup a day B. 1 cup a day C. 2-3 cups D. More than 3 cups
6. How many **alcoholic drinks** do you usually have per week? One drink means 12 ounces of beer, 4 ounces of wine or 1 ounce of liquor. A. Seldom or Never B. 1-3 drinks C. 4-7 drinks D. 8 or more drinks
7. What is your **daily activity level**? A. Mostly resting (sleeping, lying down) B. Mostly sitting (some standing, school,) C. Good part of the day up and moving (walking) D. Lots of physical activity (good amount of day exercising or doing physical work)
8. How many minutes of **moderate aerobic physical activity** do you get each day? This means activities like walking quickly, running, biking, jumping rope, or swimming. A. 20 minutes or more B. 15-19 minutes C. 10–14 minutes D. Less than 10 minutes
9. How many hours of **sleep** do you get each night? A. 7 or more hours a night B. 5-6 hours a night C. 4 hours a night or less
10. Do you currently **smoke or chew tobacco**? A. Yes B. No, but others do around me. C. No, I did in the past but quit D. No, never
11. Do you **brush your teeth** every day? A. Yes, twice a day for two minutes B. Yes, once a day

C. No, I forget
12. Do you have any concerns about your **weight (child's weight)**? A. I have been recently told or I know I am underweight. B. I have been recently told or I know I am at a good weight. C. I have been recently told or I know I am overweight. 13. How **ready** am I to make healthy habits changes? A. I have already been keeping healthier habits for 6 months or longer B. I recently started working on healthy habits changes C. I am planning to make healthy habits changes this month D. I am planning to make healthy habits changes in the next 6 months E. I have no interest in making a change
If you could work on one healthy habit, which would it be? o Fill half your plate with veggies & fruits o Limit screen time to one hour o Be active for 60 minutes o Drink more water and limit sugar drinks

*Adapted from The Arc, 2013. Retrieved from https://www.arcind.org/healthy-habits-assessment/

Appendix B

Fifteen-Minute Obesity Prevention Protocol

Step 1 Assess
Assess weight and height and convert to BMI
Ask parent or child if older enough to fill out Health Habits
Assessment.
Step 2 Set agenda
Decide which, if any, of the Healthy Habits target behaviors (obesity components) the parent/child/adolescent may be interested in changing? or which might be easiest to change?
Step 3 Assess motivation and confidence
Assess willingness/importance
Assess confidence
Explore importance and confidence ratings
Step 4 Summarize and probe possible changes
Decide possible next steps
Set Goal- give handouts for goal
Document on Healthy Habits Assessment Form- copy for chart
and patient
Step 5 Schedule follow-up visit
Agree to follow-up visit within 3 to 6 months

*Adapted from Barlow, S. E., & The Expert Committee. (2007).

Appendix C

Obesity Management Checklist

Criteria – as measured by EHR documentation or observation	**Yes**	**No**
Weight management counseling		
Diet counseling		
Physical activity counseling		
Sleep counseling		
Screen time counseling		
Referral to a weight management care team		
Sum total		

Appendix D

Pre-Intervention Knowledge Questionnaire

Please complete questionnaire below by checking an option from the 1 to 5-rate scale.

1 – not at all familiar/confident
2 – Slightly familiar/confident
3 – Somewhat familiar/confident
4 – Moderately familiar/confident
5 – Extremely familiar/confident

☐ **Provider**
☐ **Medical Assistant**

	1	2	3	4	5
How familiar are you with AAP standard of care for childhood obesity screening and management?					
How confident are you explaining the AAP standard of care for childhood obesity screening and management?					
How familiar are you with the resources for referral to weight management care team?					
Sum Total					

Appendix E

Post-Intervention Knowledge Questionnaire

Please complete questionnaire below by checking an option from the 1 to 5-rate scale.

1 – not at all familiar/confident
2 – Slightly familiar/confident
3 – Somewhat familiar/confident
4 – Moderately familiar/confident
5 – Extremely familiar/confident

☐ **Provider**
☐ **Medical Assistant**

	1	2	3	4	5
How confident are you with the AAP standard of care for childhood obesity screening and management?					
How confident are you explaining the AAP standard of care for childhood obesity screening and management?					
How familiar are you with the resources for referral to weight management care team?					
How useful do you find the Fifteen-Minute Obesity Prevention Protocol?					
Sum Total					

Appendix F

Weigh of Life Brochure

Texas Children's Hospital

A Weigh of Life

A Weigh of Life is an individualized, 15-session, behavior-change program offered for overweight or obese children, and at least one parent, who are motivated to make behavioral, nutrition and lifestyle changes. The program is available to pediatric patients, ages 2 to 18 years old, and includes:

Program requirements

To qualify for A Weigh of Life, patients must have the following:

- a diagnosis of BMI greater than the 85th percentile, and
- are motivated to make a lifestyle change

A Weigh of Life –Taking Action Together

Your referral to Texas Children's Hospital: Weigh of Life

Your doctor has referred your child to the Weigh of Life Program at Texas Children's Hospital. Your referral has been received and is currently being reviewed by our team to place you with a provider that best meets your needs. When the review is complete, we will contact you to schedule an appointment. For your convenience, our Weigh of Life Program providers see patients at multiple locations across the Houston area.

To make an appointment or to check on the status of a referral, please call 832-822-3065, Mon. – Fri., 8 a.m. – 5 p.m., excluding holidays.

Thank you for allowing us to care for your child.

Weigh of Life Program Providers

Vernisha Shepard, LMSW

Caren Mikhail, PhD

Weigh of Life Program Locations

Texas Children's Hospital Medical Center, Wallace Tower, 6701 Fannin St., Level 11, Houston, TX 77030

Texas Children's Specialty Care Cy-Fair, 11777 FM 1960 West, Suite 100, Houston, TX 77065

Appendix G

Evaluation Methods

Outcome measurement plan **Objective 1.** To increase the percentage of children and adolescents ages 2 to 19 years seen in Clinic A, who received adequate weight management and obesity counseling, to 75%.			
What was measured?	How was it be measured?	How often was it measured?	Where was the data be obtained?
Pre- and post-intervention knowledge of AAP standard of care	Sum of pre- and post-knowledge questions (3-item and 4-item questionnaire, respectively)	Once, prior to intervention Once, 3 months after initiation of intervention	Survey by DNP student project coordinator
Weight management counseling	Sum of items completed on obesity management checklist	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator, weekly observation of quality of provider visits
Diet counseling	Obesity management checklist	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator, weekly observation of quality of provider visits
Physical activity counseling	Obesity management checklist	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator, weekly observation of quality of provider visits

Sleep counseling	Obesity management checklist	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator, weekly observation of quality of provider visits
Screen time counseling	Obesity management checklist	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator, weekly observation of quality of provider visits

Appendix G

Evaluation Methods

Outcome measurement plan **Objective 2.** To increase the number of referrals to the weight management care team and improve the referral process in the patient population ages 2 to 19 years.			
What will be measured?	How will it be measured?	How often will it be measured?	Where will the data be obtained?
Pre-intervention knowledge of referral information provided to providers	3 questions Questionnaire	Once, prior to intervention	Survey by DNP student project coordinator
Number of referrals given to patients	Referral logs in EHR	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator
Follow-up on referrals	Follow-up office visits and faxed patient's notes from Texas Children's Hospital	Every Sunday post-intervention	Paper records and EHR reviewed by DNP student project coordinator